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10/609,158	06/27/2003	Nathan Laredo	TRAN-P206	7870

7590 06/12/2007	EXAMINER
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 November 2003*.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-32* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-32* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *27 June 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date _____.

5)☐ Notice of Informal Patent Application

6)☐ Other: _____.

DETAILED ACTION

1.   Claims 1-32 are presented for examination.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

2.   The computer readable media of claims 21-30 are directed to non-statutory subject

matter.

3.   In claim 21, for example, the broadest reasonable definition of computer readable media

may allude to a signal, as shown in the Applicant's Specification (page 5, lines 4-8). In the case

where the computer readable media relate to signals, the claim fails to comply with any of the

four statutory categories, and therefore, it is non-statutory under 35 USC 101.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4.   Claim 1 and 31-32 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply

with the enablement requirement. The claim(s) contains subject matter which was not described

in the specification in such a way as to enable one skilled in the art to which it pertains, or with

which it is most nearly connected, to make and/or use the invention.

5.   In claim 1, "the virtual memory protection" is subject matter that is not described in the

specification in such a way as to enable one of ordinary skilled in the art to make/or use the

invention.

6.   In claim 31, "access requiring external interaction" is subject matter that is not described

in the specification in such a way as to enable one of ordinary skilled in the art to make/or use

the invention.

7.   In claims 31-32, determining the type of access is subject matter that is not described in

the specification in such a way as to enable one of ordinary skilled in the art to make/or use the

invention. It is not known what the access types are and it is not described in the Specification.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the

basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

8.   Claims 1-30 are rejected under 35 U.S.C. 102(e) as being anticipated by Devine et al.

(hereinafter Device) (US 6,397,242 B1).

9.   As to claim 1, Devine teaches a method for supporting input/output for a virtual machine

(see Fig. 1-2), comprising:

executing virtual machine application instructions, wherein the application instructions

are executed using micro architecture code of a processor architecture (col. 2, lines 27-35, col. 9,

lines 11-12, etc.);

receiving an I/O access from the virtual machine application (col. 2, lines 21-36, col. 13,

lines 20-36, Fig. 1-2);

using virtual memory protection to generate an exception caused by the I/O access (col.

7, lines 6-13, col. 8, lines 40-43);

entering a single step mode to perform the I/O access using a host operating system (col.

11, lines 34-40, col. 12, line 50);

updating state data for the virtual machine application in accordance with the I/O access

(col. 5, lines 60-67 through col. 6, lines 1-6); and

resuming execution of the virtual machine application (Resume 242, Fig. 2, col. 21, lines

56-60).

As to claim 2, Devine teaches wherein the micro architecture code includes an instruction

interpreter to execute the virtual machine application instructions (col. 12, line 38).

As to claim 3, Devine teaches wherein the micro architecture code includes an instruction

translator to execute the virtual machine application instructions (Fig. 2, 230).

10.   As to claim 4, Devine teaches further comprising:

executing a monitor to implement the I/O access from the virtual machine application,

wherein the monitor is configured to handle the exception caused by the I/O access (virtual

machine monitor, see Abstract, col. 5, lines 13-30).

11. As to claim 5, Devine teaches further comprising:

entering the single step mode, wherein the monitor single steps through the application

instructions to handle the exception (col. 11, lines 34-48, col. 12, lines 49-52).

12. As to claim 6, Devine teaches further comprising:

using the monitor to maintain at least one virtual device to implement the I/O access from

the virtual machine application (col. 24, lines 63-67).

13. As to claim 7, Devine teaches further comprising:

using the host operating system to access a real device in response to an access to the

virtual device (Fig. 7, 700, 720, 750, 710, 100, col. 24, lines 60-67, etc.); and

updating the state data for the virtual machine application in accordance with I/O data

retrieved from the real device (col. 5, lines 60-67 through col. 6, lines 1-6).

14. As to claim 8, Devine teaches wherein the virtual machine application instructions

comprise target instructions and the micro architecture code comprises host instructions (see

Fig. 1, col. 2, lines 27-35, col. 9, lines 11-12).

15.   As to claim 9, Devine teaches wherein the target instructions are x86 instructions and the

host instructions are VLIW instructions (col. 2, line 32).

16.   As to claim 10, Devine teaches wherein the virtual machine is an x86 compatible virtual

machine (col. 9, lines 7-11).

17.   As to claim 11, Devine teaches a system for supporting input/output for a virtual machine

(Fig. 1-2), comprising:

        a processor architecture including micro architecture code configured to execute, natively

on a CPU hardware unit of the processor architecture (col. 2, lines 27-35, col. 9, lines 11-12);

and

        a memory coupled to the processor architecture, the memory storing virtual machine

application instructions, wherein the application instructions are executed using the micro

architecture code, the micro architecture code causing the processor architecture to implement a

method comprising (col. 13, lines 20-36):

        receiving an I/O access from the virtual machine application (col. 25, lines 14-21, etc.);

        upon receiving the I/O access, generating an exception (col. 25, lines 14-21, etc.);

        performing theI/O access by using a host operating system (Fig. 7, 700, 720, 750, 710,

100, etc.);

        updating state data for the virtual machine application in accordance with the I/O access

(col. 5, lines 60-67 through col. 6, lines 1-6); and

resuming execution of the virtual machine application (Resume 242, Fig. 2, col. 21, lines 56-60).

18.   As to claims 12-21, they are rejected for the same reasons as stated in the rejections of claims 2-11.

19.   As to claims 22-30, they are rejected for the same reasons as stated in the rejections of claims 2-10.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

20.   Claims 31-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Devine et al. (hereinafter Device) (US 6,397,242 B1).

21.   As to claim 31, Devine teaches a method for supporting input/output for a virtual machine, comprising:

executing a virtual machine application, wherein virtual machine application instructions

are executed using micro architecture code of a processor architecture (col. 2, lines 27-35, col. 9,

lines 11-12, etc.);

receiving an access requiring external interaction from the virtual machine application

(col. 2, lines 21-36, col. 13, lines 20-36, Fig. 1-2);

determine a type of the access by using the micro architecture code;

handling the access using a handler selected in accordance with the type of the access;

and

resuming execution of the virtual machine application (Resume 242, Fig. 2, col. 21, lines

56-60).

Devine is silent in determining an access type using the micro architecture code and

handling the access using a handler. However, it is well known in the art that to use handlers to

handle accessing. In addition, one of ordinary skill in the art would know that for each handler a

type attribute is included and must be specified for each handler element. It would have been

obvious to one of ordinary skill in the art at the time the invention was made to include a handler

that includes access types to handle accessing to the existing system of Devine because this

would improve the control, coordination and efficiency of execution.

22.   As to claim 32, Devine teaches wherein a virtual machine component coupled to the

micro architecture code determines the type of the access (col. 2, lines 27-35, col. 9, lines 11-12,

etc.).

Conclusion

23.   The prior art made of record and not relied upon is considered pertinent to applicant's

disclosure:

      a.   Cota-Robles et al. (US 2004/0010788 A1) teaches a typical virtual machine

      system, wherein application instructions are executed using micro architecture code (as

      well as other architectures).

24.   Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Kenneth Tang whose telephone number is (571) 272-3772. The

examiner can normally be reached on 8:30AM - 6:00PM, Every other Friday off.

25.   If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Meng-Ai An can be reached on (571) 272-3756. The fax phone number for the

organization where this application or proceeding is assigned is 571-273-8300.

26.   Information regarding the status of an application may be obtained from the Patent

Application Information Retrieval (PAIR) system. Status information for published applications

may be obtained from either Private PAIR or Public PAIR. Status information for unpublished

applications is available through Private PAIR only. For more information about the PAIR

system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR

system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would

like assistance from a USPTO Customer Service Representative or access to the automated

information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Kt
5/24/07

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